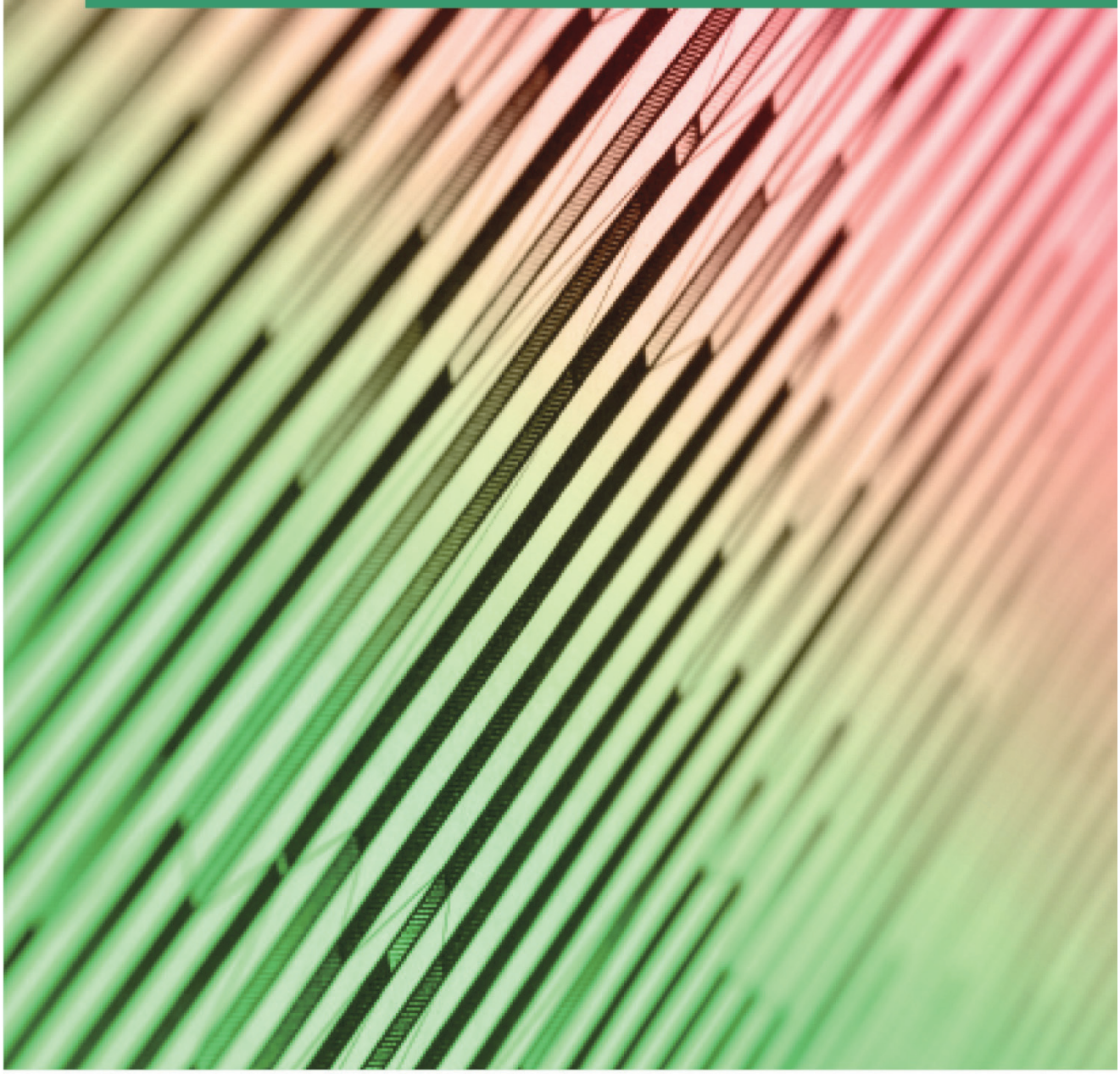
statistics

Natural gas information

Overview



IEA

2019

The following analysis is an overview from the publication *Natural Gas Information 2019* which can be purchased from the IEA webstore. The data can be purchased at http://data.iea.org.

Please note that we strongly advise users to read definitions, detailed methodology and country specific notes which can be found at http://wds.iea.org/wds/pdf/gas_documentation.pdf

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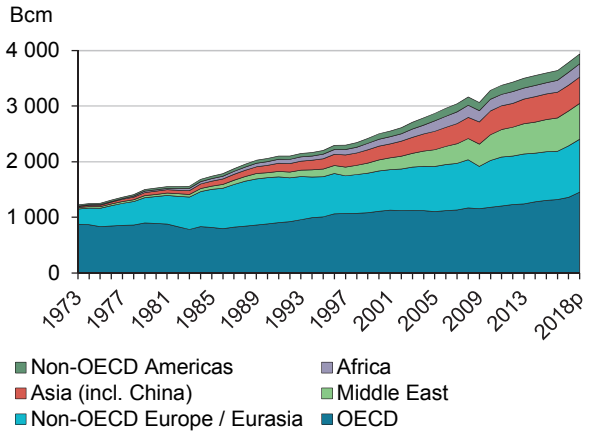
NATURAL GAS OVERVIEW

Production

In 2018[1], a new high was reached for global production of natural gas with 3 937 Billion cubic metres (Bcm), a 4.0% increase compared to 2017. This trend has been observed since the financial crisis, with global production of natural gas increasing at an annually compounded growth rate of 2.8% since 2009.

Figure 1. World natural gas production by region

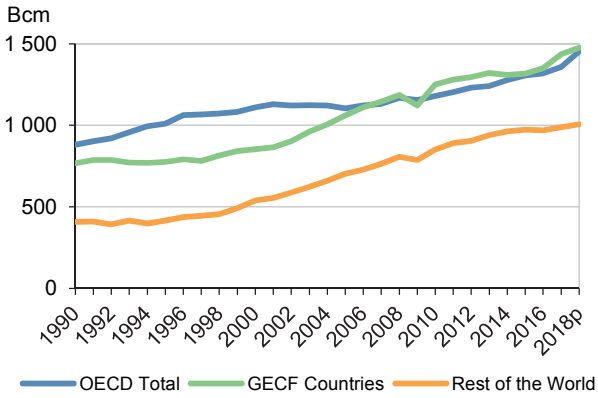


This growth in 2018 represents an addition of 152.0 Bcm to global natural gas production and comes mostly from the OECD Americas region, which experienced an increase of 95.2 Bcm, while the second largest contributor to the increase is the non-OECD Europe and Eurasia region with an additional 24.8 Bcm.

At the OECD level, total natural gas production showed a 7.0% increase, up to 1 454 Bcm following the surge in the production of natural gas in the OECD Americas region, driven by the United States (+88.6 Bcm; +11.5%) along with the continued increase experienced by the OECD Asia and Oceania in recent years, pushed by Australia (+14.8 Bcm; +14.4%). OECD Europe, however, is the only region showing a negative contribution for 2018, with a decrease of 14.5 Bcm, due to the production caps applied to the Groningen field in the Netherlands.

Outside of the OECD, total production of natural gas increased by 57.3 Bcm in 2018, which is a 2.4% growth year-on-year, driven by both Russia (+20.0 Bcm; +2.9%) and the People's Republic of China (+12.2 Bcm; +8.3%).

Figure 2. World natural gas production by country grouping

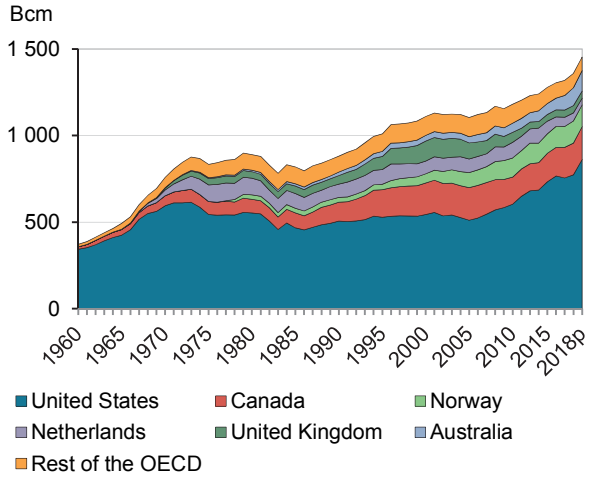


The production in the members of the Gas Exporting Countries Forum (GECF)[2] increased by 2.7%. Of the additional 39.3 Bcm produced in 2018, the biggest contributors were Russia (+2.9%), Iran (+4.4%), Egypt (+12.0%) and Qatar (+1.6%). Overall GECF produced 1 476 Bcm (37.5%. of global supply), slightly above the OECD (36.9%).

1. All energy data for 2018 are provisional.

2. GECF member countries are: Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad and Tobago, United Arab Emirates and Venezuela.

Figure 3. Natural gas production in the OECD



Looking at individual countries, some specific elements contributed to the production changes observed in 2018.

For OECD member countries:

- The production in the United States has significantly increased (+88.6 Bcm; +11.5%), one of the most significant gains in absolute terms since the beginning of the shale revolution.
- Australia has been experiencing continued growth in its natural gas production over the past years as the output of the Itchys gas-condensate field in the Browse basin is still ramping up.
- Canada is still experiencing a steady increase in its natural gas production since 2013 and remains the 4th largest global producer.
- In the Netherlands the production of natural gas is gradually declining due to the commitments to reduce the exploitation of the Groningen field, located in a region subject to potential earthquakes.
- After three years of continued increase with a peak in growth in 2017, Norway's natural gas production declined in 2018 (-2.7 Bcm; -2.1%) but still remains the first contributor to the production of the OECD Europe area.

Among non-OECD countries:

- Russia experienced the second largest increase in production of natural gas (+20 Bcm; +2.9%), now producing more than 0.7 Tcm in 2018. The country remains the second largest global producer.
- Iran has been experiencing a robust natural gas production increase for the past two decades. In 2018, an additional amount of 9.7 Bcm (+4.4%) was produced.
- Since 2005, the production of natural gas in China more than tripled, growing from 49.3 Bcm to 160.2 Bcm in 2018. The additional 12.2 Bcm observed in 2018 represent an 8.3% growth.
- In Qatar, growth in natural gas production remains relatively flat, after a slight drawdown in 2017. The fifth largest producer of natural gas, showed a small increase of 1.6% in 2018 (+2.6 Bcm).
- After four years of continued increase, Algeria's natural gas production decelerated to remain relatively flat in 2018, while Saudi Arabia experienced a 1.7 Bcm increase, superseding Algeria as the 9th largest natural gas producer in the world.

The top five natural gas-producing countries (United States, Russia, Iran, Canada and Qatar) together increased their share of the world's production moving from 53.2% in 2017 to just over 55.0% in 2018.

Imports

Global trade passed the 1.2 Tcm threshold in 2018 with an additional 34.5 Bcm compared to 2017. This 2.9% growth in trade is mostly accounted for by the increase in LNG trade at the global scale (+28.7 Bcm; +7.3%). The share of LNG in the global gas trade is now 34.3%, 1.5 percentage points more than in 2017.

China has clearly emerged as a driver of the imports growth, both for LNG and pipeline trade, with an increase of 19.8 Bcm and 10.4 Bcm respectively, for 2018.

Pipeline imports

Looking at gross trade statistics including intra-regional trade, in terms of pipeline imports, the OECD area as a whole experienced a 5.5 Bcm decrease in 2018. But because of the decline in production of natural gas, it remains highly dependent on pipeline imports from countries outside the OECD area, such as Russia, which represents 31.5% of the total pipeline imports of the OECD in 2018, one percentage point more than in 2017.

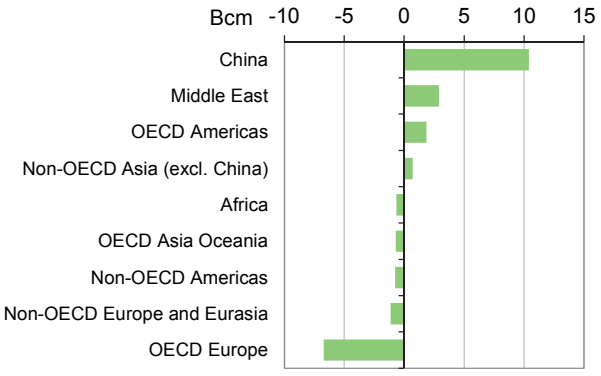
Only the OECD Americas pipeline imports increased (+1.8 Bcm), following an 8.7 Bcm contribution from Mexico.

The OECD Europe region remains the largest importing area of the world with 75.6% of the OECD total pipeline imports, driven by Germany (121.4 Bcm) and followed by Italy (59.2 Bcm) and the Netherlands (54.7 Bcm).

The decrease in pipeline imports in OECD Asia and Oceania (-0.7 Bcm) was due to the increase in Australian LNG output coming from the Itchy gas-condensate field.

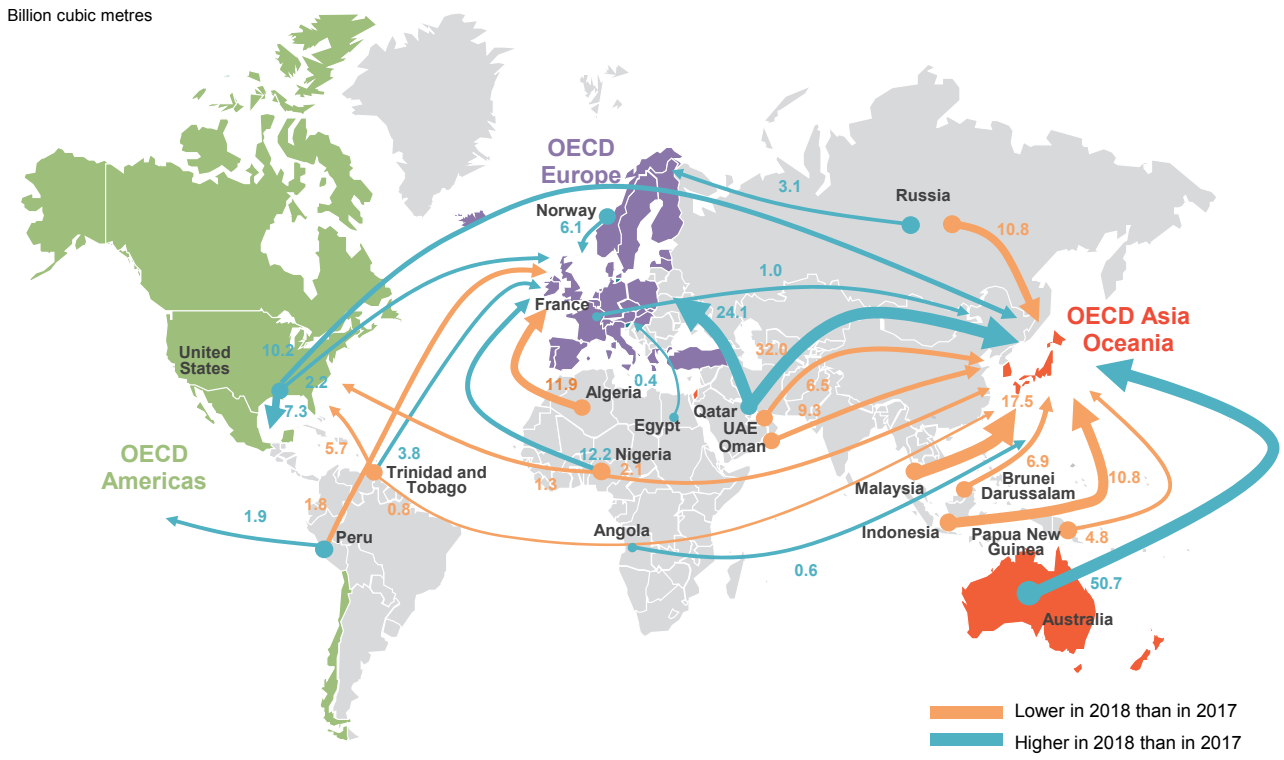
Outside the OECD area, the non-OECD Europe and Eurasia region experienced a decline in its pipeline imports (-1.3 Bcm), along with Latin America (-0.8 Bcm) and Africa (-0.7 Bcm). In Eurasia this was driven by the contraction in Ukrainian imports (-3.4 Bcm). In Africa, the decrease was driven by Egypt (-0.7 Bcm) as it moved towards self-sufficiency of natural gas in 2018 and became net exporter the same year.

Figure 4. Change in natural gas imports by pipeline, 2017-2018p



On the other hand, China (+10.3 Bcm), the Middle East (+2.9 Bcm) and Asia (excluding China, +0.8 Bcm) to a lesser extent, all increased their pipeline imports of natural gas.

Figure 5. Map of LNG trade flows in 2018p in the OECD[1,2]



1. The trade volumes smaller than 400 mcm are not represented in this map.

2. This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

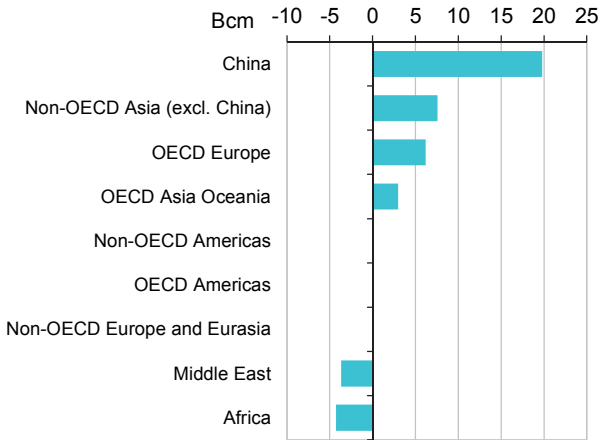
LNG imports

Increases in LNG imports were observed in all OECD regions. The highest increase was observed in the OECD Europe region (+6.1 Bcm), which almost offsets the decrease in its pipeline imports. The OECD Asia and Oceania region follows, with a +2.9 Bcm increase. The real driver for this was the Korean increase of 7.3 Bcm, while Japan showed a decrease of 4.6 Bcm, partly owing to nuclear reactors that had been closed in the wake of Fukushima's disaster now resuming operations. The contribution of the OECD Americas region was only marginal (+0.03 Bcm) in 2018.

Putting an end to six consecutive years of decrease, Qatar resumed growth in its exports to the OECD area (+8.0%). Qatar remains the first country of origin of imports for OECD countries, but Australian exports are increasing rapidly, reaching a level only about 5.4 Bcm less than Qatar, with 50.7 Bcm supplied to OECD countries. The United States is the third most important exporter of the area, after being net exporter of LNG for three consecutive years. While overall non-OECD countries have increased their imports of LNG in 2018, this was largely driven by a handful of countries, including China (+19.8 Bcm) and Asian countries such as Pakistan (+3.6 Bcm) and India (+1.2 Bcm). Conversely, Africa (-4.3 Bcm) and the Middle East (-3.7 Bcm), experienced a decrease in their LNG imports. While resuming its gas exports, Egypt's LNG imports decreased by 4.2 Bcm.

In 2018, the non-OECD area gained more weight in the overall LNG trade, now accounting for 40.0% of the total LNG imports.

Figure 6. Change in LNG imports, 2017 - 2018



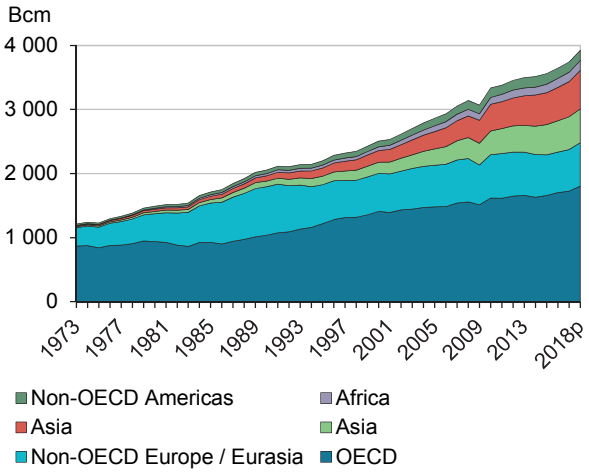
Demand

In 2018, global demand for natural gas increased by 4.9% compared to 2017, rising to 3 922 Bcm.

For OECD countries natural gas demand was 4.5% higher than in the previous year (+76.9 Bcm).

The increase comes entirely from the OECD Americas region (+89.9 Bcm; +9.3%), driven by the United States (+78.5 Bcm; +10.2%), and Canada (+10.6 Bcm; +9.2%). Slightly offsetting this growth, the OECD Europe region (-12.3 Bcm; -2.3%) and the OECD Asia and Oceania region (-0.6 Bcm; -0.3%) decreased their demand in 2018. The decrease in natural gas consumption for OECD Asia and Oceania was driven by Japan (-6.1 Bcm; -5.2%) where nuclear reactors are restarting operations, substituting for natural gas used for power generation.

Figure 7. World natural gas demand by region

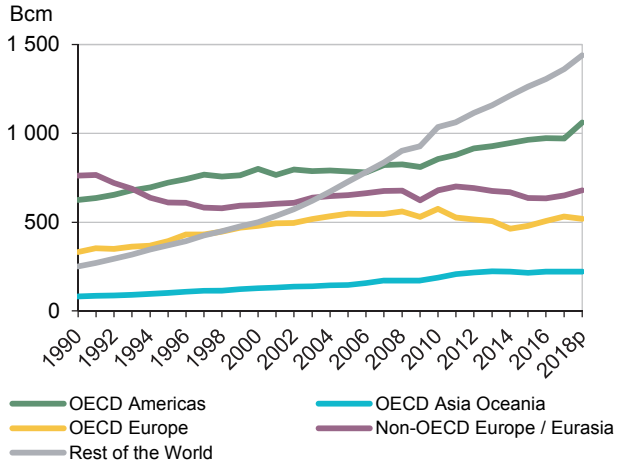


In non-OECD countries, natural gas demand increased as well (+5.3%). Different trends characterized the demand growth since 1990 across regions: OECD Americas, OECD Europe, OECD Asia/Oceania, non-OECD Europe/Eurasia and the rest of the World (special case for China):

- In the OECD Americas region consumption grew steadily between 1990 and 2000 when it stabilized around 800 Bcm for 10 years. In 2010 demand growth resumed until 2016. After a small decline in 2017, the demand of natural gas in the OECD Americas hit an all-time record by hitting 1 060 Bcm in 2018.

- In the OECD Europe region, the increase was sustained until 2005, when it stabilized between 530 Bcm and 575 Bcm until 2010. Then, it fell reaching a low of 460 Bcm in 2014. Despite growth in the recent years, it is still far from the levels prior to the financial crisis in 2009 In addition to macroeconomic drivers, improvements in energy efficiency in major gas consuming sectors, such as space heating also contributed to slower demand growth.
- In the OECD Asia/Oceania region, demand also increased steadily until 2007 when it remained almost constant for three years before growing again in 2010 (driven by demand growth in Korea) and 2011 (driven by the decrease in nuclear power generation after the Fukushima accident in Japan). Since then, it has oscillated around 225 Bcm.
- In non-OECD Europe/Eurasia, natural gas consumption remained fairly constant after 1994.
- Finally, in the rest of the World, natural gas consumption showed a strong average growth rate of 7.7% per year in the last 20 years. This trend has been even stronger in China, where the average increase rate was of 13.3% per year in the same period.

Figure 8. World natural gas demand by selected regions



At a country level, significant increases in natural gas demand were registered in 2018 for the United States (+78.5 Bcm; +10.2%), the People's Republic of China (+42.3 Bcm; +17.8%) and Russia +24.7 Bcm; 5.3%). Additional noteworthy increases were also observed in Canada (+10.5 Bcm), Iran (+10.4 Bcm), and Egypt (+4.1 Bcm).

On the other hand, natural gas demand decreased in Japan (-6.1 Bcm), Turkey (-4.0 Bcm), Germany (-2.6 Bcm) and Italy (-2.5 Bcm).

Detailed demand data by sector, available up to 2017, show an increase in the demand of non-OECD countries, principally in the largest gas consuming sector, the heat and power generation (+26.6 Bcm; +3.1%). The countries driving this increase were Iran (+7.6 Bcm), China (+3.4 Bcm) and Iraq (+3.4 Bcm), along with other countries of Asia and the Middle East.

In the OECD area, however, natural gas demand for power generation broke up with the increasing trend observed in the recent years with a 5.5 Bcm decrease.

Looking at other major natural gas consuming sectors, the OECD and non-OECD countries appear to be more in line.

Figure 9. Natural gas use for power generation

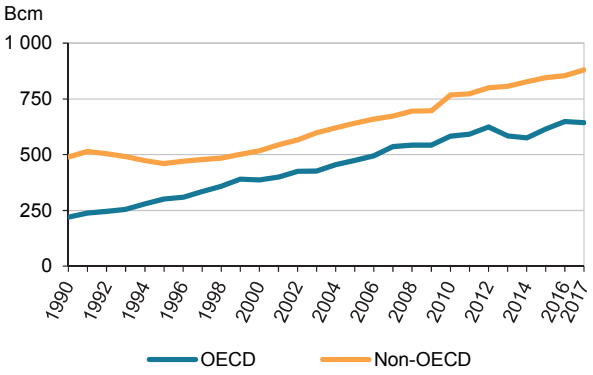
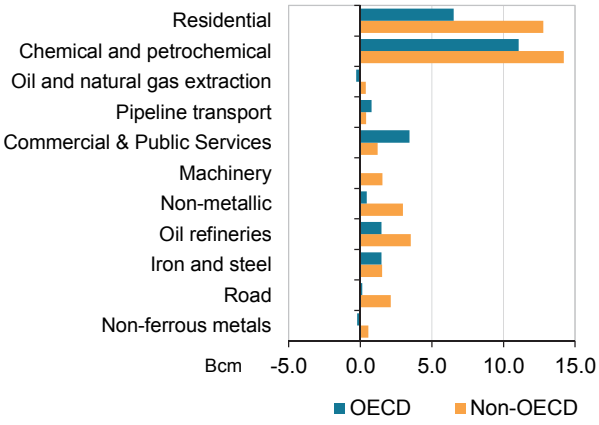


Figure 10. Change in natural gas demand in selected sectors, ranked by magnitude, 2016-2017



In 2017 the industry sector showed an increase in natural gas consumption in both the OECD (+15.8 Bcm) and the non-OECD (+35.0 Bcm) countries. This increase was mainly driven by the chemical sector in the OECD area (+11.1 Bcm). Increases were also observed in other sectors mostly in the residential

(+6.5 Bcm) and commercial (+3.4 Bcm) sectors. In the non-OECD countries, the same trend was observed to a larger extent: the chemical and residential sectors increased by 14.2 Bcm and 12.8 Bcm respectively.

For the other sectors in the non-OECD countries, all of them experienced an increase, while only non-ferrous metals and machinery showed a slight decrease in the OECD area.

Prices

In 2018, natural gas import prices by pipeline increased by 23.4% for the European Union members, while in the United States natural gas import prices remained relatively flat with a marginal 0.8% increase. As such, the price gap widened in 2018, further marking the break in the converging pattern that had been observed from 2013 to 2016. The difference between the two prices now stands at 4.54 USD/mmBtu, higher than the difference that could be observed in 2014 before the convergence took place.

On the contrary, LNG import prices continued to converge. Concomitantly, the prices of LNG imports for the United States (+36.4%), the European Union (+24.6%), and Japan and Korea (+14.5%) increased in 2018. The three prices are now contained in a band close to 2.50 dollars per mmBtu, the highest being Japan and Korea (USD 9.32/mmBtu), and the United States the lowest (USD 6.01/mmBtu). Since 2014, however, the difference between the prices of LNG imports for the European Union member states, now at USD 6.79/mmBtu, and the price for the Unites States, has been close to a dollar or lower.

Figure 11. Natural gas import prices by pipeline

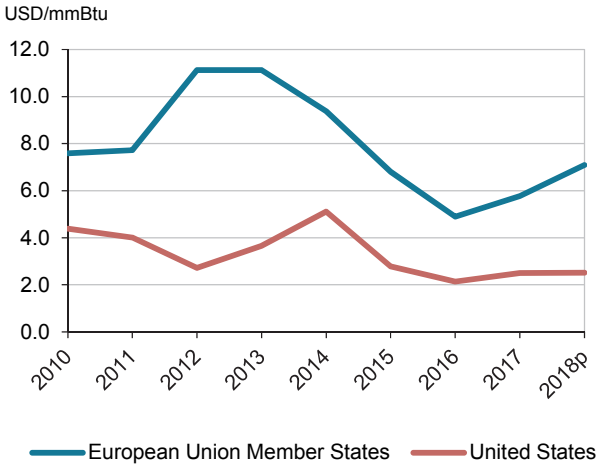
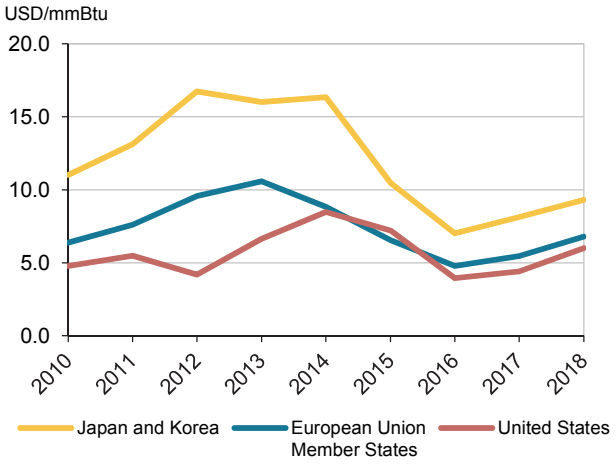


Figure 12. LNG import prices



These price trends are a reflection of the relative positions of different regions in the LNG market, with the United States being a net exporter of natural gas for the third consecutive year.